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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,606	02/25/2005	Edgar Bolinth	112740-1058	7978

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BELL, BOYD & LLOYD, LLP  
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CHICAGO, IL 60690

EXAMINER
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HO, HUY C

ART UNIT	PAPER NUMBER
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2617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,606	<b>Applicant(s)</b> BOLINTH ET AL.	
	<b>Examiner</b> Huy C. Ho	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 10-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 10-13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundson et al. (5,790,516) further in view of Ramesh (6,463,105).

Consider claim 10, Gudmundson discloses a method for transmitting data in a multi-carrier system to which a frequency band is assigned, for which carrier frequencies are subdivided into at least one sub-carrier band dividing the frequency band (see the abstract), the method comprising:

performing, on a send side, an adaptive pre-emphasis of a send signal for a part of the carrier frequencies of the at least one sub-carrier band (see col 1 lines 9-13, col 3 lines 65-67, col 4 lines 1-5, col 4 lines 15-22, describing pulse shaping function being multiplied with a OFDM data signal before transmission over a channel in a purpose of lessening the effect of Doppler effect and inter symbol interference);

providing that the adaptive pre-emphasis relates only to the part of the carrier frequencies of the at least one sub-carrier band (col 4 lines 63-67, col 5 lines 1-13, col 6 lines 25-55, describing a pulse shaping function is included as a part of each subcarrier).

Gudmundson does not specifically show current transmission characteristics, however, Gudmundson discusses plurality of data symbols are modulated onto one of a plurality of subcarriers comprising a first data signal, then this first data signal being multiplied by a pulseshaping function to generate a second data signal that is then transmitted over a communication channel of the OFDM system. Ramesh discloses current transmission characteristics (see the abstract, col 3 lines 20-30, 44-67, col 4 lines 30-40, describing estimation of a carrier, communication channel interference, channel response characteristics over a time period, thus disclosing transmission characteristics).

Since both Gudmundson and Ramesh teach method and system for data transmission in a multi-channel communication system, communication system, it would have been obvious to one skilled in the art to modify Gudmundson teaching, and have current transmission characteristics, taught by Ramesh, to improve method and system for channel estimation, as discussed by Ramesh (see col 1 lines 6-10, 30-67, col 2 lines 1-67, col 3 lines 1-18).

Consider claim 20, Gudmundson a transmit device for transmitting data in a multi-carrier system to which a frequency band is assigned, of which carrier frequencies are subdivided into at least one sub-carrier band subdividing the frequency band (see the abstract), comprising:

parts for pre-emphasis of a certain part of the carrier frequencies of the at least one sub-carrier frequency of a send signal, which is adaptively performed such that the pre-emphasis relates only to the certain part of the carrier frequencies of the at least one sub-carrier band (see the abstract, col 3 lines 20-30, 44-67, col 4 lines 30-40, describing estimation of a carrier, communication channel interference, channel response characteristics over a time period, thus disclosing transmission characteristics).

Gudmundson does not specifically show current transmission characteristics, however, Gudmundson discusses plurality of data symbols are modulated onto one of a plurality of subcarriers comprising a first data signal, then this first data signal being multiplied by a pulseshaping function to generate a second data signal that is then transmitted over a communication channel of the OFDM system. Ramesh discloses current transmission characteristics (see the abstract, col 3 lines 20-30, 44-67, col 4 lines 30-40, describing estimation of a carrier, communication channel interference, channel response characteristics over a time period, thus disclosing transmission characteristics).

Since both Gudmundson and Ramesh teach method and system for data transmission in a multi-channel communication system, communication system, it would have been obvious to one skilled in the art to modify Gudmundson teaching, and have current transmission characteristics, taught by Ramesh, to improve method and system for channel estimation, as discussed by Ramesh (see col 1 lines 6-10, 30-67, col 2 lines 1-67, col 3 lines 1-18).

Consider claim 11, A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the pre-emphasis is performed by at least one of a filtering

and a windowing in at least one of a time and a frequency range (col 7 lines 1-65, describing FFT circuit being used, pulseshaping multiplier, OFDM symbol time and frequency bandwidth).

Consider claim 12, The method for transmitting data as claimed in claim 11, Gudmundson, as modified by Ramesh, discloses wherein the filtering is performed by a signal filter which exhibits substantially high filter rates of change in the frequency range (col 3 lines 25-40).

Consider claim 13, A method for transmitting data as claimed in claim 11, Gudmundson, as modified by Ramesh, discloses wherein a window function is used which is embodied such that the windowing is executed in the time range with an oversampling being used to achieve high-filtered rates of change in the frequency range (col 3 lines 25-40, col 7 lines 5-21, col 8 lines 13-20).

Consider claim 15, A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the multi-carrier system is used in combination with an FDMA method (col 1 lines 15-35, col 2 lines 55-67).

Consider claim 16, A method for transmitting data as claimed in claim 15, Gudmundson, as modified by Ramesh, further discloses wherein the FDMA method is an OFDMA method (col 1 lines 15-35, col 2 lines 55-67).

Consider claim 17, A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the pre-emphasis is limited to carrier frequency in edge areas of the at least one sub-carrier which is assigned to one user (col 3 lines 20-55, col 4 lines 5-15).

Consider claim 18, A method for transmitting data as claimed in claim 17, Gudmundson, as modified by Ramesh, further discloses wherein the edge areas border on other sub-carrier bands (col 3 lines 20-55, col 4 lines 5-15).

Consider claim 19, A method for transmitting data as claimed in claim 13, Gudmundson, as modified by Ramesh, further discloses wherein a value of a first symbol duration assigned to one of the emphasized carrier frequencies remains the same (col 5 lines 1-41, the duration is the same for pulsesshaping carriers), and wherein, with regard to one of the time range windowing and the frequency range filtering, an overall length of a time range window not exceeding an OFDM useful symbol duration as well as a duration of a cyclic prefix and a necessary rate of change of the sub-carriers is determined by the oversampling (col 3 lines 25-40, col 7 lines 5-36, col 8 lines 13-20, describing the FFT frame OFDM symbol time and are constant for a given frequency bandwidth, for a cyclic extension).

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundson et al. (5,790,516), in view of Ramesh (6,463,105) and further in view of Muri (4,513,385).

Consider claim 14, A method for transmitting data as claimed in claim 13, Gudmundson, as modified by Ramesh, further discloses wherein the window function (see col 6 lines 14-25, col 8 lines 50-67). Gudmundson, as modified by Ramesh, does not specifically show Blackman, Bartel, Kaiser, and Papoulis. Muri discloses Blackman, Bartel, Kaiser, and Papoulis (see col 2 lines 5-33).

Since both Gudmundson, Ramesh and Mari teach a method and system for digital signal processing in communication system, it would have been obvious to one skilled in the art to modify the teaching of Gudmundson and Ramesh, and have Blackman, Bartel, Kaiser, and Papoulis, taught by Muri, to improve the method and system in a digital sampled system, as discussed by Muri (see col 1 lines 15-67, col 2 lines 1-43).

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy C. Ho whose telephone number is (571) 270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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